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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/688,831	10/17/2003	Sang Kycong Yun	02598/100G366-US2	2392

7590 10/18/2006

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EXAMINER

TUGBANG, ANTHONY D

ART UNIT	PAPER NUMBER
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3729

DATE MAILED: 10/18/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/688,831

Applicant(s)

YUN ET AL.

Examiner

A. Dexter Tugbang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 July 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 26-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 26-30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☒ Certified copies of the priority documents have been received in Application No. 09/444,128.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 10/17/03 & 5/18/06.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application
- ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. The applicant(s) response filed on July 21, 2006 has been fully considered and made of record.
2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action. The rejections are maintained for the reasons below and are repeated merely for the applicant(s) convenience.

Claim Objections

3. Claim 26 is objected to because of the following informalities: "it" (line 10) should be changed to --the upper electrode--.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

4. Claims 26, 27, 28 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Fujii et al 5,868,948, Kosaka et al 6,207,268 and Rodriguez 2,533,140.

Fujii discloses a method for manufacturing a device comprising: providing a metal substrate (e.g. 102 in Fig. 2); forming a piezoelectric/electrostrictive layer 103 on the metal substrate using a mixture; masking and exposing the piezoelectric/electrostrictive layer and an upper electrode with a mask (e.g. photoresist 105) to pattern the piezoelectric/electrostrictive layer and the upper electrode; and forming an upper electrode 104 on the piezoelectric/electrostrictive layer using a mixture of a metal.

Fujii does not appear to mention that the piezoelectric/electrostrictive layer uses a specific mixture of a photosensitive resin and a piezoelectric/electrostrictive ceramic and that the upper electrode layer uses a specific mixture of a photosensitive resin with the metal.

Kosaka et al suggests that upper electrode can include mixtures of a photosensitive resin with a metal (col. 18, lines 19+) to benefit from such properties as superior smoothness and high yields (col. 2, lines 40-47).

Regarding Claim(s) 30, the photosensitive resin of Kosaka can be considered to be a conductive UV adhesive to the extent that the resin provides laminating characteristics of a laminate (col. 2, lines 45-47).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the method of Fujii by forming the upper electrode with a mixture of a photosensitive resin and a metal, as taught by Kosaka, for the advantages of having such properties of superior smoothness and high yields.

Rodriguez teaches that a piezoelectric/electrostrictive layer can be formed with a mixture of conventional materials, such as a photosensitive resin and a ceramic, for the advantage of at least providing remanent piezoelectric properties within the piezoelectric/electrostrictive layer.

Regarding Claim(s) 27, Rodriguez further teaches that the ceramic device is thermally treated by cooling from 2500 °F (= 1371 °C) to atmospheric conditions, which would overlap the claimed range of 200-500 °C.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the method of Fujii by forming the piezoelectric/electrostrictive layer

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with the mixture of a photosensitive resin and a ceramic, as taught by Rodriquez, to positively provide remanent piezoelectric effects in the piezoelectric/electrostrictive layer.

Regarding Claim(s) 28, it would have been an obvious matter of design choice to choose any desired material of the metal substrate since the applicant(s) have not disclosed that the claimed material of either nickel or stainless steal, solves any stated problem or is for any particular purpose and it appears that the invention would perform equally well with the metal material taught by Fujii. Furthermore, the metal material of the substrate has no impact on the method steps.

5. Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over the prior art above, as applied to claim 26, and further in view of Lubitz et al 5,425,889.

Fujii, as modified by Kosaka and Rodriguez, disclose the claimed manufacturing method as relied upon above. The modified Fujii method does not teach a sol solution with a photosensitive complexing agent.

Lubitz teaches that piezoelectric/electrostrictive layers can include ceramics with a sol solution and various photosensitive complexing agents, as these conventional materials in a mixture simplify manufacturing techniques (col. 5, lines 52-60).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the method of Fujii by using a mixture of a sol solution with a photosensitive complexing agent, as taught by Lubitz, to advantageously simplify manufacturing techniques.

Response to Arguments

6. The applicant(s) arguments filed on July 21, 2006 have been fully considered but they are not persuasive.

In regards to the merits of the prior art above, the applicant(s) urge that the combination of the above references would not be obvious to one of ordinary skill in the art insomuch as there is no motivation to combine the references.

The examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, the examiner relied upon the primary reference of Fujii et al and the deficiencies in Fujii were more than made up for, or taught by, Kosaka et al and Rodriguez. The motivation came expressly from each of the prior art references themselves, e.g. Kosaka et al (at col. 2, lines 42-47), Rodriguez (at col. 1, lines 1-10), and Lubitz et al (at col. 2, lines 52-56), as detailed above, each having their own associated advantages. Thus, the examiner's position is that a *prima facie* case of obviousness was established.

Conclusion

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to A. Dexter Tugbang whose telephone number is 571-272-4570.

The examiner can normally be reached on Monday - Friday 7:30 am - 4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Peter Vo can be reached on 571-272-4690. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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A handwritten signature in black ink, appearing to read 'A. Dexter Tugbang', with a long horizontal flourish extending to the right.

A. Dexter Tugbang
Primary Examiner
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October 16, 2006